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Letter dated 16 December 2016 from the Chair of the Security Council Committee established pursuant to resolution 1718 (2006) addressed to the President of the Security Council

On behalf of the Security Council Committee established pursuant to resolution 1718 (2006), I have the honour to transmit herewith a report of the Committee dated 16 December 2016 that was prepared in accordance with paragraph 7 of resolution 2321 (2016).

I would appreciate it if the present letter and the report were brought to the attention of the members of the Security Council and issued as a document of the Council.

(*Signed*) Román **Oyarzun Marchesi**
Chair
Security Council Committee established
pursuant to resolution 1718 (2006)

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Report of the Security Council Committee established pursuant to resolution 1718 (2006) prepared in accordance with paragraph 7 of resolution 2321 (2016)

1. On 30 November 2016, the Security Council, by its resolution 2321 (2016), decided that the measures imposed in paragraphs 8 (a), (b) and (c) of resolution 1718 (2016) would also apply to the items listed in a new conventional arms dual-use list to be adopted by the Security Council Committee established pursuant to resolution 1718 (2006) and directed the Committee to adopt that list within 15 days and to report to the Council to that effect.

2. To fulfil that task, the Committee considered a conventional arms dual-use list. All items, materials, equipment, goods and technology contained in the following list are listed only for the purpose of the implementation of resolution 2321 (2016) and shall not be considered to be setting precedents for international and multilateral mechanisms, regimes, instruments, principles and practices in the spheres of non-proliferation and export control.

3. On 15 December 2016, the Committee acted in line with the directive of the Security Council and approved the following list:

Special materials and related equipment

Systems, equipment and components

"Composite" structures or laminates

"Composite" structures or laminates consisting of a metal or carbon "matrix" and any of the following:

(a) Carbon "fibrous or filamentary materials" having a "specific modulus" exceeding 10.15×10^6 m and a "specific tensile strength" exceeding 17.7×10^4 m;

(b) Inorganic "fibrous or filamentary materials" with a "specific modulus" exceeding 2.54×10^6 m and a melting, softening, decomposition or sublimation point exceeding 1,649°C in an inert environment.

Metals and alloys

1. Materials specially designed for use as absorbers of electromagnetic waves, or intrinsically conductive polymers including materials for absorbing frequencies exceeding 2×10^8 Hz but less than 3×10^{12} Hz.

2. Materials for absorbing frequencies exceeding 1.5×10^{14} Hz but less than 3.7×10^{14} Hz and not transparent to visible light.

3. Intrinsically conductive polymeric materials with a bulk electrical conductivity exceeding 10,000 S/m or a sheet (surface) resistivity of less than 100 ohms/square, based on any of the following polymers: polyaniline, polypyrrole, polythiophene, Poly phenylene-vinylene, poly thienylene-vinylene.

4. Ceramic-ceramic "composite" materials with a glass or oxide "matrix" and reinforced with fibres having all of the following and made from the following

materials: Si-N, Si-C, Si-Al-O-N or Si-O-N; and having a "specific tensile strength" exceeding 12.7×10^3 m.

5. Ceramic-ceramic "composite" materials, incorporating particles, whiskers or fibres, where carbides or nitrides of silicon, zirconium or boron form the "matrix".

6. Inorganic "fibrous or filamentary materials", having all of the following: "specific modulus" exceeding 2.54×10^6 m; and melting, softening, decomposition or sublimation point exceeding 1,649°C in an inert environment.

7. Plutonium in any form with a plutonium isotopic assay of plutonium-238 of more than 50 per cent by weight.

8. Previously separate neptunium-237 in any form.

Software

"Software" for the "development" of the materials listed above.

Technology

"Technology" for the "development" or "production" of the equipment or materials listed above.

Test, inspection and production equipment

1. "Tow-placement machines", of which the motions for positioning and laying tows are coordinated and programmed in two or more "primary servo positioning" axes, specially designed for the manufacture of "composite" airframe or missile structures.

2. Equipment for producing metal alloys, metal alloy powder or alloyed materials, specially designed to avoid contamination and specially designed for use in one of the processes specified "controlled environment processes" outlined in the fourth paragraph of section 2 of the "Materials" section.

3. Tools, dies, moulds or fixtures, for "superplastic forming" or "diffusion bonding" titanium, aluminium or their alloys, specially designed for the manufacture of any of the following:

(a) Airframe or aerospace structures;

(b) Aircraft or aerospace engines; or

(c) Specially designed components for airframe or aerospace structures or for aircraft or aerospace engines.

Materials processing equipment

Software

"Software" for electronic devices, even when residing in an electronic device or system, enabling such devices or systems to function as a "numerical control" unit, capable of coordinating simultaneously more than 4 axes for "contouring control".

Technology

1. "Technology" for the "development" or "production" of "software" or equipment for electronic devices, even when residing in an electronic device or system, enabling such devices or systems to function as a "numerical control" unit, capable of coordinating simultaneously more than 4 axes for "contouring control", including:

(a) Machine tools for turning, having two or more axes which can be coordinated simultaneously for "contouring control", having any of the following:

1. "Unidirectional positioning repeatability" equal to or less (better) than 0.9 µm along one or more linear axis with a travel length less than 1.0 m; or

2. "Unidirectional positioning repeatability" equal to or less (better) than 1.1 µm along one or more linear axis with a travel length equal to or greater than 1.0 m;

(b) Machine tools for milling having any of the following:

1. Three linear axes plus one rotary axis which can be coordinated simultaneously for "contouring control" having any of the following:

a. "Unidirectional positioning repeatability" equal to or less (better) than 0.9 µm along one or more linear axis with a travel length less than 1.0 m; or

b. "Unidirectional positioning repeatability" equal to or less (better) than 1.1 µm along one or more linear axis with a travel length equal to or greater than 1.0 m.

2. Five or more axes which can be coordinated simultaneously for "contouring control" having any of the following:

(a) "Unidirectional positioning repeatability" equal to or less (better) than 0.9 µm along one or more linear axis with a travel length less than 1.0 m;

(b) "Unidirectional positioning repeatability" equal to or less (better) than 1.4 µm along one or more linear axis with a travel length equal to or greater than 1 m and less than 4 m; and having a "unidirectional positioning repeatability" equal to or less (better) than 0.9 µm along one or more linear axis; or

(c) "Unidirectional positioning repeatability" equal to or less (better) than 6.0 µm along one or more linear axis with a travel length equal to or greater than 4 m.

3. A "unidirectional positioning repeatability" for jig boring machines equal to or less (better) than 1.1 µm along one or more linear axis.

4. Electrical discharge machines of the non-wire type which have two or more rotary axes which can be coordinated simultaneously for "contouring control".

5. Deep-hole-drilling machines and turning machines modified for deep-hole-drilling, having a maximum depth-of-bore capability exceeding 5 m.

6. "Numerically controlled" or manual machine tools, and specially designed components, controls and accessories therefor, specially designed for the shaving,

finishing, grinding or honing of hardened (Rc = 40 or more) spur, helical and double-helical gears with a pitch diameter exceeding 1,250 mm and a face width of 15 per cent of pitch diameter or larger finished to a quality of AGMA 14 or better (equivalent to ISO 1328 class 3).

Electronics

Systems, equipment and components

"Space-qualified" atomic frequency standards.

Software

"Software" specially designed for the "development" or "production" of atomic frequency standards being any of the following:

(a) "Space-qualified";

(b) Non-rubidium and having a long-term stability less (better) than 1×10^{-11}/month; or

(c) Non-"space-qualified" and having all of the following:

1. Being a rubidium standard;

2. Long-term stability less (better) than 1×10^{-11}/month; and

3. Total power consumption of less than 1 watt.

Technology

"Technology" for the "development" or "production" of the electronic systems, equipment and components listed above.

Telecommunications

Systems, equipment and components

1. Counter-improvised explosive device equipment and related equipment, as follows:

(a) Radio frequency transmitting equipment, not specified by 5.A.1.f., designed or modified for prematurely activating or preventing the initiation of improvised explosive devices;

(b) Equipment using techniques designed to enable radio communications in the same frequency channels on which co-located equipment specified by 5.A.1.h.1. is transmitting.

2. Mobile telecommunications interception or jamming equipment, and monitoring equipment therefor, as follows, and specially designed components therefor:

(a) Interception equipment designed for the extraction of voice or data, transmitted over the air interface; or

(b) Interception equipment designed for the extraction of client device or subscriber identifiers (e.g., IMSI, TIMSI or IMEI), signalling or other metadata transmitted over the air interface.

Software

"Software" specially designed or modified for the "development", "production" or "use" of telecommunication systems, equipment and components.

Technology

"Technology" for the "development" or "production" of equipment, functions or features of telecommunications systems, equipment, components and accessories.

Sensors and "lasers"

Systems, equipment and components

1. Systems or transmitting and receiving arrays, designed for object detection or location, having any of the following:

(a) A transmitting frequency below 5 kHz or a sound pressure level exceeding 224 dB (reference 1 µPa at 1 m) for equipment with an operating frequency in the band from 5 kHz to 10 kHz inclusive;

(b) Sound pressure level exceeding 224 dB (reference 1 µPa at 1 m) for equipment with an operating frequency in the band from 10 kHz to 24 kHz inclusive;

(c) Sound pressure level exceeding 235 dB (reference 1 µPa at 1 m) for equipment with an operating frequency in the band between 24 kHz and 30 kHz;

(d) Forming beams of less than 1° on any axis and having an operating frequency of less than 100 kHz;

(e) Designed to operate with an unambiguous display range exceeding 5,120 m; or

(f) Designed to withstand pressure during normal operation at depths exceeding 1,000 m and having transducers with any of the following:

1. Dynamic compensation for pressure; or

2. Incorporating other than lead zirconate titanate as the transduction element.

2. Active individual sonars, specially designed or modified to detect, locate and automatically classify swimmers or divers, having all of the following, and specially designed transmitting and receiving acoustic arrays therefor:

(a) Detection range exceeding 530 m;

(b) Determined position error of less than 15 m rms (root mean square) when measured at a range of 530 m; and

(c) Transmitted pulse signal and width exceeding 3 kHz.

3. Processing equipment, specially designed for real-time application with towed acoustic hydrophone arrays, having "user accessible programmability" and time or frequency domain processing and correlation, including spectral analysis, digital filtering and beamforming using Fast Fourier or other transforms or processes.

4. Processing equipment, specially designed for real-time application with bottom or bay cable systems, having "user accessible programmability" and time or frequency domain processing and correlation, including spectral analysis, digital filtering and beamforming using Fast Fourier or other transforms or processes.

Optical sensors

1. Optical sensors or equipment and components thereof as follows:

(a) "Space-qualified" solid-state detectors having all of the following:

1. A peak response in the wavelength range exceeding 10 nm but not exceeding 300 nm; and

2. A response of less than 0.1 per cent relative to the peak response at a wavelength exceeding 400 nm;

3. A peak response in the wavelength range exceeding 900 nm but not exceeding 1,200 nm; and

4. A response "time constant" of 95 ns or less;

5. Having a peak response in the wavelength range exceeding 1,200 nm but not exceeding 30,000 nm.

2. "Space-qualified" "focal plane arrays" having more than 2,048 elements per array and having a peak response in the wavelength range exceeding 300 nm but not exceeding 900 nm.

3. Image intensifier tubes having all of the following:

(a) A peak response in the wavelength range exceeding 400 nm but not exceeding 1,050 nm;

(b) Electron image amplification using any of the following:

1. A microchannel plate with a hole pitch (centre-to-centre spacing) of 12 µm or less; or

2. An electron-sensing device with a non-binned pixel pitch of 500 µm or less, specially designed or modified to achieve "charge multiplication" other than by a microchannel plate; and

(c) Any of the following photocathodes:

1. Multialkali photocathodes (e.g., S-20 and S-25) having a luminous sensitivity exceeding 700 µA/lm;

2. GaAs or GaInAs photocathodes; or

3. Other "III/V compound" semiconductor photocathodes having a maximum "radiant sensitivity" exceeding 10 mA/W.

4. Image intensifier tubes having all of the following:

(a) A peak response in the wavelength range exceeding 1,050 nm but not exceeding 1,800 nm;

(b) Electron image amplification using any of the following:

1. A microchannel plate with a hole pitch (centre-to-centre spacing) of 12 µm or less; or

2. An electron-sensing device with a non-binned pixel pitch of 500 µm or less, specially designed or modified to achieve "charge multiplication" other than by a microchannel plate; and

(c) "III/V compound" semiconductor (e.g., GaAs or GaInAs) photocathodes and transferred electron photocathodes, having a maximum "radiant sensitivity" exceeding 15 mA/W.

5. Non-"space-qualified" "focal plane arrays" as follows:

(a) Having all of the following:

1. Individual elements with a peak response within the wavelength range exceeding 900 nm but not exceeding 1,050 nm; and

2. Any of the following:

a. A response "time constant" of less than 0.5 ns; or

b. Specially designed or modified to achieve "charge multiplication" and having a maximum "radiant sensitivity" exceeding 10 mA/W;

3. Having all of the following:

a. Individual elements with a peak response in the wavelength range exceeding 1,050 nm but not exceeding 1,200 nm; and

b. Any of the following:

1. A response "time constant" of 95 ns or less; or

2. Specially designed or modified to achieve "charge multiplication" and having a maximum "radiant sensitivity" exceeding 10 mA/W.

6. Non-"space-qualified" non-linear (2-dimensional) "focal plane arrays" having individual elements with a peak response in the wavelength range exceeding 1,200 nm but not exceeding 30,000 nm.

7. Non-"space-qualified" linear (1-dimensional) "focal plane arrays" having all of the following:

(a) Individual elements with a peak response in the wavelength range exceeding 1,200 nm but not exceeding 3,000 nm; and

(b) Any of the following:

1. A ratio of "scan direction" dimension of the detector element to the "cross-scan direction" dimension of the detector element of less than 3.8; or

2. Signal processing in the detector elements.

8. Non-"space-qualified" linear (1-dimensional) "focal plane arrays" having individual elements with a peak response in the wavelength range exceeding 3,000 nm but not exceeding 30,000 nm;

9. Non-"space-qualified" non-linear (2-dimensional) infrared "focal plane arrays" based on "microbolometer" material having individual elements with an unfiltered response in the wavelength range equal to or exceeding 8,000 nm but not exceeding 14,000 nm.

10. Non-"space-qualified" "focal plane arrays" having all of the following:

(a) Individual detector elements with a peak response in the wavelength range exceeding 400 nm but not exceeding 900 nm;

(b) Specially designed or modified to achieve "charge multiplication" and having a maximum "radiant sensitivity" exceeding 10 mA/W for wavelengths exceeding 760 nm; and

(c) Greater than 32 elements.

11. "Direct view" imaging equipment incorporating any of the following:

(a) Image intensifier tubes having the characteristics listed in section 3 or 4 under "Optical sensors";

(b) "Focal plane arrays" having the characteristics listed in sections 5-12 under "Optical sensors"; or

(c) Solid-state detectors having the characteristics listed in section 1 under "Optical sensors".

Cameras

1. Imaging cameras incorporating image intensifier tubes having the characteristics listed in sections 3 and 4 under "Optical sensors".

(a) Imaging cameras incorporating "focal plane arrays" specified in sections 5-11 under "Optical sensors";

2. Imaging cameras incorporating solid-state detectors specified in section 1 or 2 under "Optical sensors".

Radar

1. Radar systems, equipment and assemblies, having any of the following, and specially designed components therefor:

(a) Capable of operating in synthetic aperture radar mode, inverse synthetic aperture radar mode or sidelooking airborne radar mode;

(b) Employing processing of radar signals and using any of the following:

1. "Radar spread spectrum" techniques; or

2. "Radar frequency agility" techniques; or

(c) Having "signal processing" subsystems using "pulse compression" and having any of the following:

1. A "pulse compression" ratio exceeding 150; or

2. A compressed pulse width of less than 200 ns.

2. Pulse radar cross-section measurement systems having transmit pulse widths of 100 ns or less, and specially designed components therefor.

Software

1. "Software" specially designed for the "development" or "production" of items in the "Optics" section or the "Radar" section.

2. "Software" as follows:

(a) "Software" specially designed for acoustic beam forming for the "real-time processing" of acoustic data for passive reception using towed hydrophone arrays;

(b) "Source code" for the "real- time processing" of acoustic data for passive reception using towed hydrophone arrays;

(c) "Software" specially designed for acoustic beam forming for the "real-time processing" of acoustic data for passive reception using bottom or bay cable systems;

(d) "Source code" for the "real-time processing" of acoustic data for passive reception using bottom or bay cable systems;

(e) "Software" or "source code", specially designed for all of the following:

1. "Real-time processing" of acoustic data from sonar systems;

2. Automatically detecting, classifying and determining the location of divers or swimmers.

Technology

"Technology" for the "development" or "production" of any item on this list.

Navigation and avionics

Software

1. "Source code" for the operation or maintenance of any inertial navigation equipment, except "source code" for gimballed attitude and heading reference systems.

2. "Software" specially designed or modified to improve the operational performance or reduce the navigational error of systems.

3. "Source code" for hybrid integrated systems which improves the operational performance or reduces the navigational error of systems by continuously combining heading data with any of the following:

(a) Doppler radar or sonar velocity data;

(b) Global Navigation Satellite Systems reference data; or

(c) Data from "Data-Based Referenced Navigation" systems.

4. "Source code" incorporating "development" "technology" for any of the following:

(a) Digital flight management systems for "total control of flight";

(b) Integrated propulsion and flight control systems;

(c) "Fly-by-wire systems" or "fly-by-light systems";

(d) Fault-tolerant or self-reconfiguring "active flight control systems";

(e) Air data systems based on surface static data; or

(f) Three-dimensional displays.

Note: Does not apply to "source code" associated with common computer elements and utilities (e.g., input signal acquisition, output signal transmission, computer program and data loading, built-in test, task scheduling mechanisms) not providing a specific flight control system function.

Technology

1. "Technology" for the "development" or "production" of systems, equipment and components for navigation and avionics.

2. "Technology" for the "development" of "software" for systems, equipment and components for navigation and avionics.

Marine systems, equipment and components

Systems, equipment and components

1. Manned, untethered submersible vehicles having any of the following:

(a) Designed to "operate autonomously" and having a lifting capacity of all the following:

1. 10 per cent or more of their weight in air; and

2. 15 kN or more;

(b) Designed to operate at depths exceeding 1,000 m; or

(c) Having all of the following:

1. Designed to continuously "operate autonomously" for 10 hours or more; and

2. "Range" of 25 nautical miles or more.

Technical notes

1. The term "operate autonomously" means fully submerged, without snorkel, all systems working and cruising at minimum speed at which the submersible can safely control its depth dynamically by using its depth planes only, with no need for a support vessel or support base on the surface, seabed or shore, and containing a propulsion system for submerged or surface use.

2. The term "range" means half the maximum distance that a submersible vehicle can "operate autonomously".

2. Unmanned, tethered submersible vehicles designed to operate at depths exceeding 1,000 m and having any of the following:

(a) Designed for self-propelled manoeuvre using direct current propulsion motors or thrusters; or

(b) Fibre-optic data link.

3. Unmanned, untethered submersible vehicles having any of the following:

(a) Designed for deciding a course relative to any geographical reference without real-time human assistance;

(b) Acoustic data or command link; or

(c) Optical data or command link exceeding 1,000 m.

4. Systems specially designed or modified for the automated control of the motion of submersible vehicles using navigation data, having closed-loop servo-controls and having any of the following:

(a) Enabling a vehicle to move within 10 m of a predetermined point in the water column;

(b) Maintaining the position of the vehicle within 10 m of a predetermined point in the water column; or

(c) Maintaining the position of the vehicle within 10 m while following a cable on or under the seabed.

5. "Robots" specially designed for underwater use, controlled by using a dedicated computer and having any of the following:

(a) Systems that control the "robot" using information from sensors which measure force or torque applied to an external object, distance to an external object or tactile sense between the "robot" and an external object; or

(b) The ability to exert a force of 250 N or more or a torque of 250 Nm or more and using titanium based alloys or "composite" "fibrous or filamentary materials" in their structural members.

6. Noise reduction systems designed for use on vessels of 1,000 tonnes displacement or more, as follows:

(a) Systems that attenuate underwater noise at frequencies below 500 Hz and consist of compound acoustic mounts for the acoustic isolation of diesel engines, diesel generator sets, gas turbines, gas turbine generator sets, propulsion motors or

propulsion reduction gears, specially designed for sound or vibration isolation and having an intermediate mass exceeding 30 per cent of the equipment to be mounted;

(b) "Active noise reduction or cancellation systems" or magnetic bearings, specially designed for power transmission systems.

Software

"Software" for marine systems, equipment, components, test, inspection and "production" equipment and other related technology.

Technology

"Technology" for marine systems, equipment, components, test, inspection and "production" equipment and other related technology.

Aerospace and propulsion

Systems, equipment and components

Ramjet, scramjet or combined cycle engines, and specially designed components therefor.

Software

"Software" and "technology" for aerospace and propulsion systems, equipment, components, test, inspection and "production" equipment and other related technology.

Technology

"Technology" for aerospace and propulsion systems, equipment, components, test, inspection and "production" equipment and other related technology.